

Data Sheet

Customer: _____

Product: Low Ohm (Metal Strip) Chip Resistor – LRC Series

Sizes: 1206/2512/2725/2728/4527

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VIKING TECH CORPORATION
光頤科技股份有限公司
No.70, Guangfu N. Rd., Hukou
Township, Hsinchu County
303, Taiwan (R.O.C)

TEL:886-3-5972931
FAX:886-3-5972935•886-3-5973494
E-mail:sales@viking.com.tw

VIKING TECH CORPORATION KAOHSIUNG BRANCH
光頤科技股份有限公司高雄分公司
No.248-3, Sin-Sheng Rd., Cian-Jhen Dist., Kaohsiung,
806, Taiwan

TEL:886-7-8217999
FAX:886-7-8228229
E-mail:sales@viking.com.tw

VIKING ELECTRONICS (WUXI) CO., LTD.
光頤電子(無錫)有限公司
No.22 Xixia Road, Machinery & Industry Park,
National Hi-Tech Industrial Development Zone
of Wuxi, Wuxi, Jiangsu Province, China
Zip Code:214028
TEL:86-510-85203339
FAX:86-510-85203667•86-510-85203977
E-mail:china@viking.com.tw

Produced by (QC)	Checked (QC)	Approved by (QC)	Prepared by (Sales)	Accepted by (Customer)
23-Apr-21	23-Apr-21	23-Apr-21		
Kris Chen	Ben Chang	Ben Chang		

Low Ohm (Metal Strip) Chip Resistor – LRC Series



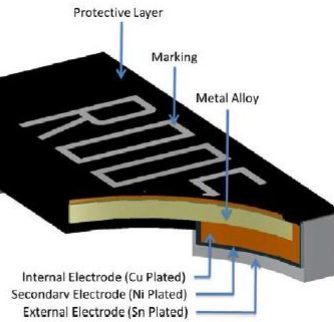
Features

- Low resistance / low TCR
- Excellent long term stability
- RoHS compliant and halogen free
- Lead free
- High precision current sensing and voltage division

Applications

- Entertainment Product
- Power Supply
- Measuring Instrument
- Industrial Product
- Battery Management System

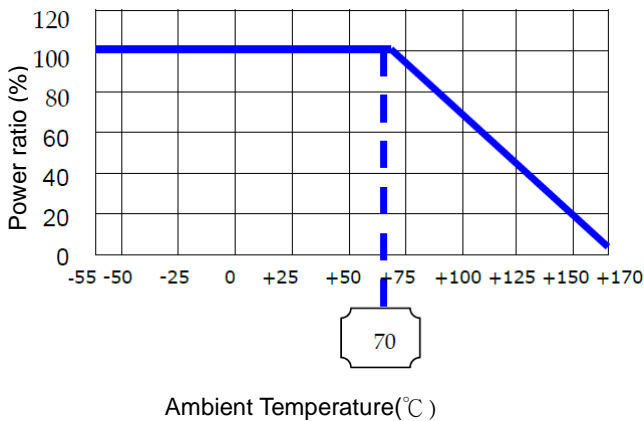
Construction



Part Numbering

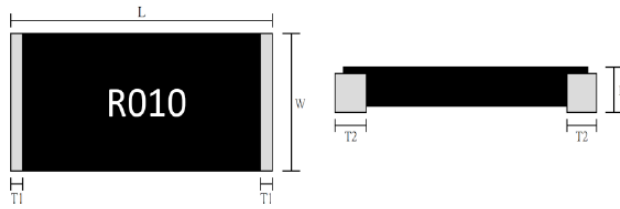
LRC	06	F	T	D	T	R005
Product Type	Dimensions (LxW)	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Power Rating	Resistance
	06: 1206 12: 2512 25: 2725 28: 2728 27: 4527	D: ±0.5% F: ±1% G: ±2% J: ±5%	T: Taping Reel	D: ±50 W: ±75 E: ±100	U: 1/2W Q: 3/4W T: 1W A: 1.5W S: 2W R: 3W H: 4W D: 5W	R001: 0.001Ω R010: 0.01Ω 0M50: 0.0005Ω

Derating Curve



Low Ohm (Metal Strip) Chip Resistor

■ Dimensions



Type	Size (Inch)	Power Rating	Resistance (mΩ)	L (mm)	W (mm)	H (mm)	T1 (mm)	T2 (mm)
LRC06	1206	1/2W 3/4W	1	3.200±0.254	1.650±0.254	0.820±0.254	0.508±0.254	0.508±0.254
			2	3.200±0.254	1.650±0.254	0.700±0.254	0.508±0.254	0.508±0.254
			3	3.200±0.254	1.650±0.254	0.600±0.254	0.508±0.254	0.508±0.254
			4-20	3.200±0.254	1.650±0.254	0.550±0.254	0.508±0.254	0.508±0.254
			21-50	3.200±0.254	1.650±0.254	0.470±0.254	0.508±0.254	0.508±0.254
			51-75	3.200±0.254	1.650±0.254	0.400±0.254	0.508±0.254	0.508±0.254
		1W	1	3.200±0.254	1.650±0.254	0.820±0.254	0.508±0.254	0.508±0.254
			2	3.200±0.254	1.650±0.254	0.700±0.254	0.508±0.254	0.508±0.254
			3	3.200±0.254	1.650±0.254	0.600±0.254	0.508±0.254	0.508±0.254
			4-20	3.200±0.254	1.650±0.254	0.550±0.254	0.508±0.254	0.508±0.254
			21-50	3.200±0.254	1.650±0.254	0.470±0.254	0.508±0.254	0.508±0.254
		1.5W	1	3.200±0.254	1.650±0.254	0.820±0.254	0.508±0.254	0.508±0.254
			2	3.200±0.254	1.650±0.254	0.700±0.254	0.508±0.254	0.508±0.254
			3	3.200±0.254	1.650±0.254	0.600±0.254	0.508±0.254	0.508±0.254
			4-10	3.200±0.254	1.650±0.254	0.550±0.254	0.508±0.254	0.508±0.254
LRC12	2512	1W 2W	0.5	6.350±0.254	3.050±0.254	0.820±0.254	1.980±0.254	2.000±0.254
			0.75	6.350±0.254	3.050±0.254	0.700±0.254	1.150±0.254	1.980±0.254
			1	6.350±0.254	3.050±0.254	0.720±0.254	1.150±0.254	2.200±0.254
			1.5	6.350±0.254	3.050±0.254	0.720±0.254	1.150±0.254	1.400±0.254
			2-5	6.350±0.254	3.050±0.254	0.720±0.254	1.150±0.254	1.150±0.254
			6	6.350±0.254	3.050±0.254	0.550±0.254	1.150±0.254	1.100±0.254
			7-10	6.350±0.254	3.050±0.254	0.600±0.254	1.150±0.254	1.100±0.254
			11-75	6.350±0.254	3.050±0.254	0.600±0.254	1.050±0.254	1.100±0.254
			76-100	6.350±0.254	3.050±0.254	0.550±0.254	0.750±0.254	1.100±0.254
			101-135	6.350±0.254	3.050±0.254	0.470±0.254	0.750±0.254	1.100±0.254
		3W	0.5	6.350±0.254	3.050±0.254	0.820±0.254	1.980±0.254	2.000±0.254
			0.75	6.350±0.254	3.050±0.254	0.700±0.254	1.150±0.254	1.980±0.254
			1	6.350±0.254	3.050±0.254	0.720±0.254	1.150±0.254	2.200±0.254
			1.5	6.350±0.254	3.050±0.254	0.720±0.254	1.150±0.254	1.400±0.254
			2-5	6.350±0.254	3.050±0.254	0.720±0.254	1.150±0.254	1.150±0.254
			6	6.350±0.254	3.050±0.254	0.550±0.254	0.750±0.254	1.100±0.254
			7-10	6.350±0.254	3.050±0.254	0.600±0.254	1.150±0.254	1.100±0.254
			11-75	6.350±0.254	3.050±0.254	0.600±0.254	0.750±0.254	1.100±0.254
			76-100	6.350±0.254	3.050±0.254	0.550±0.254	0.750±0.254	1.100±0.254
			LRC25	2725	4W	0.2	6.900±0.254	6.350±0.254
0.25	6.900±0.254	6.350±0.254				0.950±0.254	1.200±0.254	2.287±0.254
0.3	6.900±0.254	6.350±0.254				0.950±0.254	1.200±0.254	1.975±0.254
0.35	6.900±0.254	6.350±0.254				0.950±0.254	1.200±0.254	1.710±0.254
0.4	6.900±0.254	6.350±0.254				0.950±0.254	1.200±0.254	1.440±0.254
0.5	6.900±0.254	6.350±0.254				0.850±0.254	1.200±0.254	2.080±0.254
0.6	6.900±0.254	6.350±0.254				0.850±0.254	1.200±0.254	1.780±0.254
0.8	6.900±0.254	6.350±0.254				0.850±0.254	1.200±0.254	1.300±0.254
1	6.800±0.254	6.350±0.254				0.650±0.254	1.150±0.254	1.800±0.254
1.5-1.6	6.800±0.254	6.350±0.254				0.650±0.254	1.150±0.254	1.500±0.254
2-3	6.800±0.254	6.350±0.254				0.550±0.254	1.150±0.254	1.500±0.254
LRC28	2728	4W	4-450	6.600±0.254	6.700±0.254	0.580±0.254	0.400±0.254	1.050±0.254

Type	Size (Inch)	Power Rating	Resistance (mΩ)	L (mm)	W (mm)	H (mm)	T1 (mm)	T2 (mm)
LRC27	4527	2W	0.5	11.300±0.500	6.600±0.500	0.770±0.254	0.900±0.254	3.000±0.254
			1	11.300±0.500	6.600±0.500	0.650±0.254	0.900±0.254	3.000±0.254
			1.5-5	11.300±0.500	6.600±0.500	0.650±0.254	0.900±0.254	2.000±0.254
			6-100	11.300±0.500	6.600±0.500	0.550±0.254	0.900±0.254	2.000±0.254
		3W	0.5	11.300±0.500	6.600±0.500	0.770±0.254	0.900±0.254	3.000±0.254
			1	11.300±0.500	6.600±0.500	0.650±0.254	0.900±0.254	3.000±0.254
			1.5-5	11.300±0.500	6.600±0.500	0.650±0.254	0.900±0.254	2.000±0.254
			6-60	11.300±0.500	6.600±0.500	0.550±0.254	0.900±0.254	2.000±0.254
		5W	0.5	11.300±0.500	6.600±0.500	0.800±0.254	0.650±0.254	3.000±0.254
			1	11.300±0.500	6.600±0.500	0.680±0.254	0.650±0.254	3.000±0.254
			1.5-5	11.300±0.500	6.600±0.500	0.680±0.254	0.650±0.254	2.000±0.254
			6-500	11.300±0.500	6.600±0.500	0.580±0.254	0.650±0.254	2.000±0.254

Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Rating Current	Max. Overload Current	Resistance Range (mΩ)				TCR (PPM/°C)
					±0.5%	±1%	±2%	±5%	
LRC06 (1206)	1/2W	-55 ~ +170°C	22.36A	50.00A	5-75	1-75			±50
	3/4W		27.38A	54.77A	5-75	1-75			
	1W		31.62A	63.24A	5-50	1-50			
	1.5W		38.72A	77.49A	5-10	1-10			
LRC12 (2512)	1W	-55 ~ +170°C	44.72A	100.00A	-	0.5-0.75			±75
			31.62A	70.71A	5-450	1-450			±50
	2W		63.24A	141.42A	-	0.5-0.75			±75
			44.72A	100.00A	5-450	1-450			±50
	3W		77.45A	173.20A	-	0.5-0.75			±75
			54.77A	109.54A	5-100	1-100			±50
LRC25 (2725)	4W	-55 ~ +170°C	141.42A	282.84A	-	0.2			±100
			126.49A	252.98A	-	0.25-3			±50
LRC28 (2728)	4W	-55 ~ +170°C	31.62A	63.24A	7-450	4-450			±50
LRC27 (4527)	2W	-55 ~ +170°C	63.24A	141.42A	-	0.5			±75
			44.72A	100.00A	5-100	1-100			±50
	3W		77.45A	173.20A	-	0.5			±75
			54.77A	122.47A	5-60	1-60			±50
	5W		100.00A	173.20A	-	0.5			±75
			70.71A	122.47A	5-500	1-500			±50

Rating Current =√(P/R)

Resistance codes example

Resistance (4Marking)

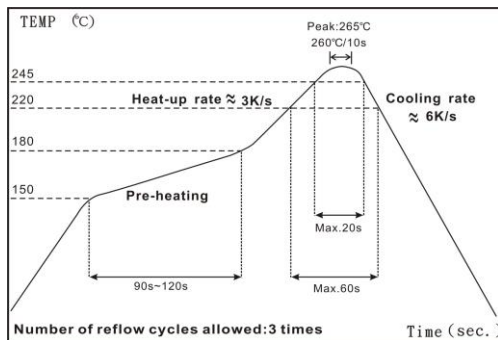
Resistance	0.5 mΩ	1mΩ	1.5mΩ	25mΩ	100mΩ
Codes	0m50	R001	1m50	R025	R100

Environmental Characteristics

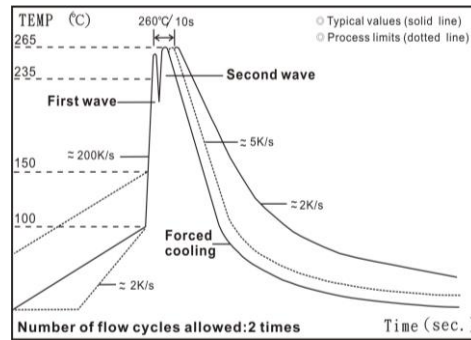
Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	JIS-C-5201-1 4.8 IEC-60115-1 4.8 At 25°C/+150°C, 25°C is the reference temperature
Short Time Overload	4527: $\Delta R/R1 \leq \pm 2.0\%$ Other sizes: $\Delta R/R1 \leq \pm 0.5\%$	JIS-C-5201-1 4.13 IEC-60115-1 4.13 1206 1/2W : 5 times rated power for 5 seconds 1206 3/4W 1W 1.5W : 4 times rated power for 5 seconds 2512 : 5 times rated power for 5 seconds 2725 : 4 times rated power for 5 seconds 2728 : 4 times rated power for 5 seconds 4527 2W 3W: 5 times rated power for 5 seconds 4527 5W: 3 times rated power for 5 seconds
High Temperature Exposure	4527: $\Delta R/R1 \leq \pm 2.0\%$ Other sizes: $\Delta R/R1 \leq \pm 1.0\%$	JIS-C-5201-1 4.25 IEC 60068-2-2 at +170°C for 1000 hrs
Resistance to Soldering Heat	$\Delta R/R1 \leq \pm 0.5\%$	JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds
Temperature Cycling	$\Delta R/R1 \leq \pm 0.5\%$	JESD22 Method JA-104 -55°C to +150°C, 1,000cycles, 30min maximum dwell time at each temperature extreme. Measurement at 24±4 hours after test condition.
Bias Humidity	$\Delta R/R1 \leq \pm 0.5\%$	MIL-STD-202 Method 103 1000 hrs 85°C/85%RH, 10% of operating power. Measurement at 24±4 hours after test condition.
Load Life (Endurance)	4527: $\Delta R/R1 \leq \pm 2.0\%$ Other sizes: $\Delta R/R1 \leq \pm 1.0\%$	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1 70±2°C, RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Solderability	95% min. coverage	JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 3 seconds
Dielectric Withstanding Voltage	No short or burned on the appearance	JIS-C-5201-1 4.7 Applied 500VAC for 1 minute
Core Body Strength	No broken	JIS-C-5201-1 4.15 Central part pressurizing force: 5N, 10 seconds
Terminal Strength	No broken	AEC-Q200-006 Pressurizing force: 17.7N, 60 seconds
Bending Strength	No broken $\Delta R/R1 \leq \pm 0.5\%$	JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending once for 2mm, 10 seconds.
Moisture Resistance	$\Delta R/R1 \leq \pm 0.5\%$	MIL-STD 202 Method 106 T=24 hours / cycle, 10 cycles. Steps 7a & 7b not required. Unpowered.

Note: This test is a destructive experiment. The top protective layer is prone to damage and peculiar smell during, in the 50mR~100mR resistance test. The resistance change rate can meets the specifications.

Soldering Condition



IR Reflow Soldering

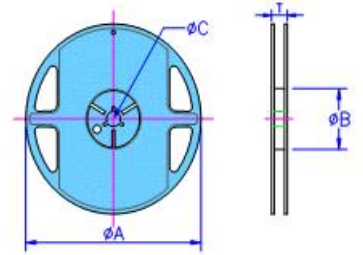


Wave Soldering

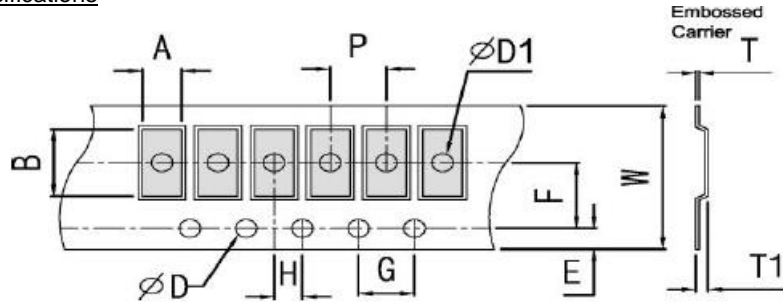
■ Packaging

Reel Specifications & Packaging Quantity

Type	Packaging Quantity	Tape Width	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	T (mm)
LRC06	Embossed	5K	7 inch	178±1.0	60±0.5	13.2±0.5	12.0±0.5
LRC06 (1mΩ)		4K					
LRC12	Embossed	4K	7 inch	178±1.0	60±0.5	13.5±0.5	16.2±0.5
LRC25 (0.2-0.8mΩ)	Embossed	1K	7 inch	178±1.0	60±0.5	13.5±0.5	16.2±0.5
LRC25		2K					
LRC28	Embossed	2K	7 inch	178±1.0	60±0.5	13.5±0.5	16.2±0.5
LRC27	Embossed	1K	24mm	7 inch	178±1.0	60±0.5	24.4±2.0

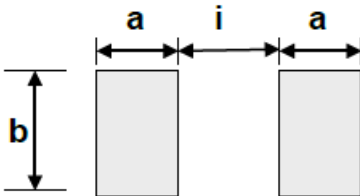


Embossed Plastic Tape Specifications



Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	G (mm)	P (mm)	H (mm)	ΦD (mm)	ΦD1 (mm)	T1 (mm)	T (mm)
LRC06 (1mΩ)	2.03±0.10	3.55±0.10	8.0±0.30	1.75±0.10	3.5±0.10	4.00±0.10	4.00±0.10	2.00±0.10	1.50+0.1/-0	1.00±0.10	1.10±0.10	0.20±0.05
LRC06	2.03±0.10	3.55±0.10	8.0±0.30	1.75±0.10	3.5±0.10	4.00±0.10	4.00±0.10	2.00±0.10	1.50+0.1/-0	1.00±0.10	0.85±0.10	0.20±0.05
LRC12 (0.5-2mΩ)	3.50±0.10	6.75±0.10	12.0±0.30	1.75±0.10	5.5±0.05	4.00±0.10	4.00±0.10	2.00±0.10	1.50+0.1/-0	1.55±0.10	1.10±0.10	0.20±0.05
LRC12	3.50±0.10	6.75±0.10	12.0±0.30	1.75±0.10	5.5±0.05	4.00±0.10	4.00±0.10	2.00±0.10	1.50+0.1/-0	1.55±0.10	0.90±0.10	0.20±0.05
LRC25 (0.2-0.8mΩ)	6.81±0.10	7.16±0.10	12.0±0.30	1.75±0.10	5.5±0.05	4.00±0.10	8.00±0.10	2.00±0.10	1.50+0.1/-0	1.55±0.10	1.30±0.10	0.25±0.05
LRC25	6.81±0.10	7.16±0.10	12.0±0.30	1.75±0.10	5.5±0.05	4.00±0.10	8.00±0.10	2.00±0.10	1.50+0.1/-0	1.55±0.10	1.05±0.10	0.25±0.05
LRC28	7.10±0.10	7.05±0.10	12.0±0.30	1.75±0.10	5.5±0.05	4.00±0.10	8.00±0.10	2.00±0.10	1.50+0.1/-0	1.55±0.10	0.95±0.10	0.20±0.05
LRC27	7.38±0.10	12.0±0.10	24.0±0.30	1.75±0.10	11.5±0.05	4.00±0.10	12.0±0.10	2.00±0.10	1.50+0.1/-0	1.50±0.10	1.05±0.10	0.30±0.10

■ Recommend Land Pattern



Type	a (mm)	b (mm)	i (mm)
LRC06	1.46	2.15	1.68
LRC12 (0.5-1mΩ)	3.24	3.68	1.27
LRC12 (1.5mΩ)	3.20	3.68	1.35
LRC12 (2-5mΩ)	2.60	3.68	2.55
LRC12 (6-200mΩ)	2.30	3.68	3.15
LRC12 (R201-R450)	2.05	3.68	3.65
LRC25 (0.25-0.35mΩ)	2.90	6.70	1.28
LRC25 (0.40-0.80mΩ)	3.25	6.85	1.70
LRC25 (1-3mΩ)	2.75	6.85	2.70
LRC28	2.05	7.20	3.90
LRC27 (0.5-1.5mΩ)	4.50	8.74	4.50
LRC27 (2-100mΩ)	3.50	8.74	6.50
LRC27 (101-500mΩ)	3.50	8.74	6.50